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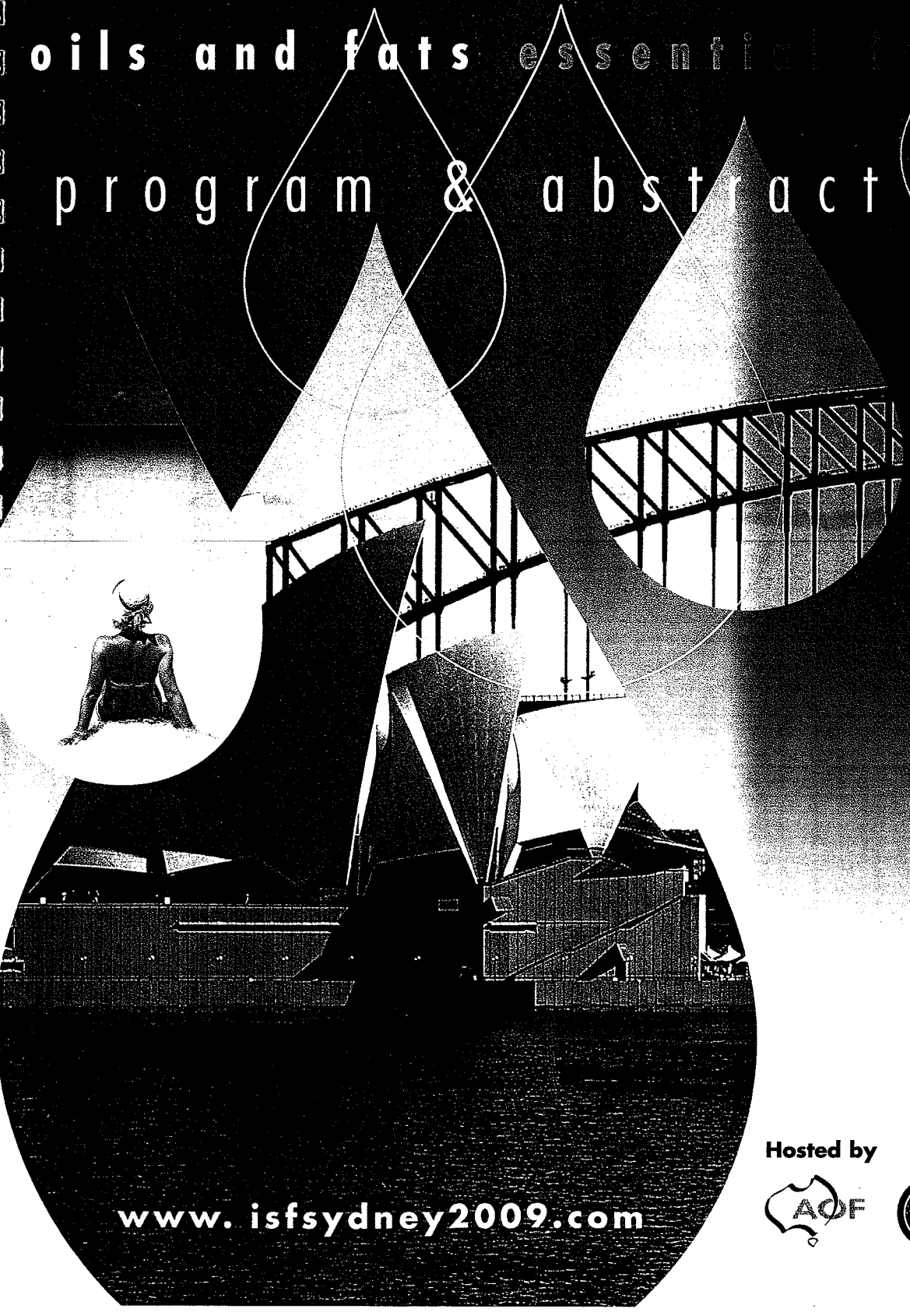

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MILK COMPOSITION AND SOMATIC CELL COUNTS IN PASTURE-BASED DAIRY COWS SUPPLEMENTED WITH CRACKED LUPINS AND CANOLA MEAL

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The price paid to dairy farmers on the basis of protein and butterfat is higher than milk volume averaging $9.31/kg of protein and $4.98/kg of butterfat compared to 49.69 cents/litre of milk. Supplementing lactating dairy cows with protein and energy sources such as canola and lupins could be a key income driver, but what feeding level is considered optimal for milk composition in pasture-based dairy cows in mid-lactation? This study evaluated the protein, fat, lactose, solids-not-fat and somatic cell counts of purebred and crossbred dairy cows fed 1 or 2 kg/cow/day of cracked lupins supplements or canola meal over a 12-week period. Fifty Holstein-Friesian (HF) and Jersey x Holstein-Friesian (JHF) dairy cows (10 unsupplemented control and 40 supplemented) were randomly assigned to treatment groups after balancing for initial milk yield, BCS and days in milk (mean initial milk yield, body weight and body condition scores were 122.5 ± 12.1 litres/d, 352.6 ± 31 kg, and 2.5 respectively). A 2 x 2 x 2 balanced factorial experimental design representing 2 breeds, 2 supplements and 2 feeding levels was utilized. All cows had *ad libitum* access to the basal diet of barley and ryegrass while supplemented cows had three weeks of adjustment. All cows were milked twice daily but milk samples for composition analysis was taken once a month and analysed at TasHerd milk testing laboratory in Hadspen, Tasmania. Data were tested for significance by fitting the fixed effects of breed, supplement, feeding level and their first order interactions using mixed model procedures in SAS with cow and days in milk as random effects. Overall differences between treatment means were declared significant at $P<0.05$. Protein, fat and somatic cell counts were significantly higher in JHF crossbreds than purebred HF, while breed differences in solids-not-fats were negligible. Supplementing with lupins at 1kg/cow/day led to a significantly low milk fat content (1.2%), low somatic cell count (97) but high protein content (3.4%) while canola fed at 2kg/cow/day gave the highest milk lactose content. The overall cheaper and more profitable option for optimal milk composition appears to be cracked lupins fed at 1kg/cow/day.